Trend Study 14-19-99

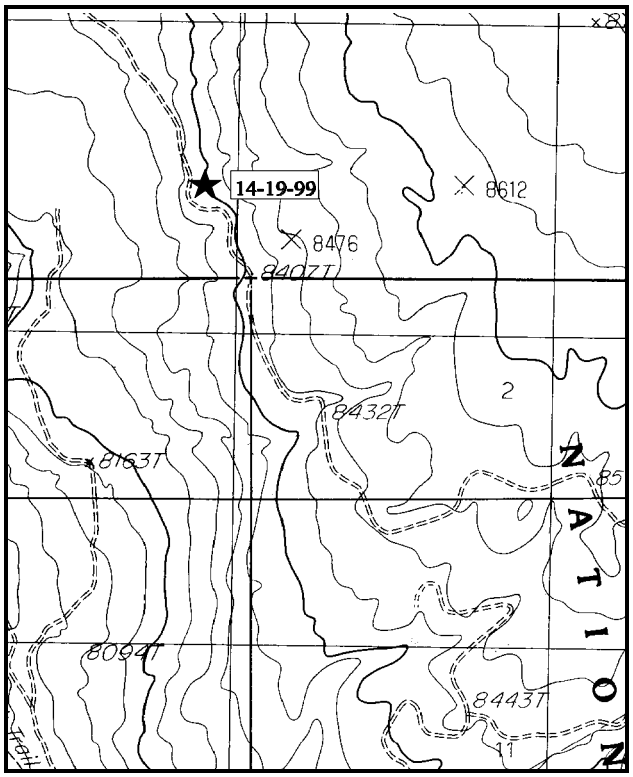
Study site name: Woodenshoe . Range type: Selective Logged-Ponderosa Pine.

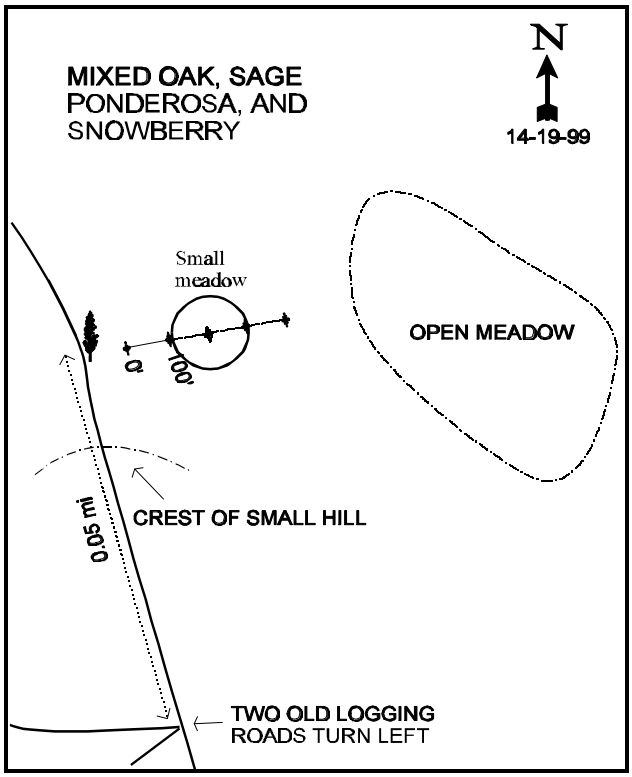
Compass bearing: frequency baseline 64°M.

Footmark (first frame at) 5 feet, footmarks (frequency belts) line 1 (11& 71ft), line 2 (34ft), line 3 (59ft), line 4 (95ft).

LOCATION DESCRIPTION

From the Kigalia Guard Station turnoff, go 2.5 miles southwest towards the Bears Ears. Turn right at the fork and proceed 2.05 miles to fork located just west of a cattleguard and opposite a corral. Turn right, and go north 1.05 mile to another fork (County Road #271a). Turn left toward Woodenshoe Point and go 1.35 miles to a fork. Stay left and continue 1.45 miles. At this point there are two overgrown, impassable logging roads taking off to the left. Go 0.05 miles (about 210 feet) past the logging roads to a moderately large ponderosa on the right and a small clump of tall oak on the left. The transect starting point is about 10 feet east side of the pine. The baseline is marked by the 1981 line-intercept red and green steel fence posts 16 inches tall. The 0-foot stake has browse tag #482 attached.





Map Name: Woodenshoe Butte Diagrammatic Sketch

Township 35S , Range 18E , Section 34 or 35 UTM 4171983.232 N, 595608.453 E

DISCUSSION

Trend Study No. 14-19 (36-7)

The Wooden Shoe summer range study is located on a plateau on the southwest portion of Elk Ridge. The study elevation is 8,400 feet, located in the middle of the gently sloping, southwest-facing plateau. The plateau drains west into the steep slickrock of Wooden Shoe Canyon. Although the vegetation is relatively dense, the area appears to be drier than the other summer range studies, which helps explain the lack of aspen. The area is dominated mainly by Ponderosa pine, Gambel oak, snowberry, sagebrush, and various perennial grasses. The trend study was established in 1986, at the same location as an old line intercept study. The 1986 trend study baseline sampled only a 100 ft baseline, mainly under Ponderosa pine. In 1992, the baseline was lengthened to better sample the area. The longer baseline samples some open meadow areas along with the Ponderosa pine forest. There has been selective removal of ponderosa pines, but no large scale logging has taken place on the site. The forest Service indicates that no future land treatments are planned. Like Kigalia Point, this study is on the Twin Springs allotment and is managed for summer grazing under a rest-rotation system by the Manti-LaSal National Forest. The numerous roads traversing the plateau facilitate logging, grazing management, and easy access to mining claims. There has been geophysical exploration, heavy uranium drilling, and oil-gas leasing in the general area. In addition to these uses, the area receives moderate summer deer use and also some elk use in late fall and early winter. Pellet group data from 1999 estimate 7 deer days use/acre (17 ddu/ha), 3 elk days use/acre (7 edu/ha), and 26 cow days use/acre (64 cdu/ha). About 30% of the cow pats are recent. The rest appear to be from last season. Cows and deer were observed near the site in 1999.

The soil is moderately deep but rocky. Effective rooting depth is estimated at nearly 19 inches. Texture is a loam with a slightly acid pH (6.5). Phosphorus is low at just 7.6 ppm. Values less that 10 ppm can limit normal plant growth and development. Parent material of the soil is granite, and bedrock is near the surface in some places. Stoniness measurements show that the majority of the rock occurs in the top 8 inches of soil profile. There is little rock or pavement on the surface due to the high amounts of vegetation and litter cover. Erosion on the site is minimal and localized.

Although the uneven aged stand of Ponderosa pine is not the most numerous woody vegetative component, many trees are large and tall (75-100 ft.). They visually dominate much of the area and provide a protective canopy cover. Overhead ponderosa cover was estimated at 21% in 1999. Oak appears to dominate the shrubby understory, although snowberry is also quite prevalent. Oak has a vigorous population with high percentages of young plants and light use. Snowberry has declined in density since 1986, but some of the change is due to the much larger sample taken in 1992. Twenty-nine percent of the snowberry was classified in poor vigor in 1986, but only 3% in 1992. Insect damage was noted on some oak, snowberry, and forbs in 1986. Mountain big sagebrush displays light to moderate use, but only makes up a small portion of the browse cover (11% in ‘99). There was an estimated 63% of the population consisting of decadent plants in 1986. Percent decadence has declined to only 30% in 1992 and 8% in 1999. Other palatable shrubs are less common, which includes chokecherry, bitterbrush, and ceanothus. Observed use is generally light except for bitterbrush which has displayed moderate to heavy use since 1986.

Although overall density is rather low and restricted by the tree and shrub over story, there is a diverse and healthy herbaceous understory. The small openings in the over story support a good, dry meadow-like stand of grasses. Common species are mutton bluegrass, Kentucky bluegrass, bottlebrush squirreltail, needle-and-thread, and sedge. Kentucky bluegrass is more common in the openings, not as shade tolerant. Several species of productive, palatable forbs are also found. Utilization of forbs is light. More notable species include thickleaf peavine, Rocky Mountain penstemon, redroot eriogonum, and silky lupine.

1986 TREND ASSESSMENT

No significant changes or trends were demonstrated by data from either the old line intercept transect data or observations from the frequency-density study. The parameters studied show consistency between years especially in terms of species composition and age structure of the population. Most data indicate an increase in the density and production of the major browse species. There also is evidence of an increase in total production, but this parameter is related more to seasonal precipitation and sampling techniques than actual trends. Overall, the vegetative community appears to be in a stable and healthy condition, supporting a variety of plants and wildlife species. The soil trend is also stable to possibly even improving with continued addition of litter forming a deep organic matter layer.

1992 TREND ASSESSMENT

With the examination of photographs and basic cover data, soil trend would be considered stable at this time for this site. But, there have been some obvious problems in the past from grazing and/or logging, for there is a large active gully near the last 100 foot frequency belt line of the vegetative transect. Even though litter cover decreased and relative percent cover of bare ground increased, all this would be expected with the extended drought since 1985. These parameters should improve with better seasonal precipitation patterns of which 1992 had been the best since 1985. The browse trend would involve condition and trend for the most abundant and preferred species which would include: mountain big sagebrush, bitterbrush, Gambel's oak, and snowberry. Bitterbrush and Gambel's oak were the only species that exhibited increases in their densities. It should be noted again that the sampling design is much larger now and species that occur clumped and/or aggregated would be sampled more accurately with better estimates of their respective densities. Snowberry's population decreased by 71%, but the proportion of the population that were classified as having poor vigor have declined from 28% in 1986 to only 3% in 1992. This is indicative of the 7 years of drought which have had a thinning effect on this rhizomatous population. Mountain big sagebrush population is now estimated to be 1,660 plants/acre in 1992. Percent decadence has improved from a high of 63% in 1986 down to 30% in 1992, indicating improvements in it's population. Browse trend for Wooden Shoe area is considered stable for this high elevation site. Trend is up for the herbaceous understory. Both the grasses and forbs have increased nested frequency values and the number of species has also increased respectively for grasses and forbs from 5 to 12 and 14 to 26. The increase in moisture in 1992 probably had much to do with this improvement in nested frequency values and improved species diversity.

TREND ASSESSMENT
soil - stable
browse - stable
herbaceous understory - up

1999 TREND ASSESSMENT

Trend for soil is considered stable. Relative percent cover of litter and bare ground have remained similar since 1992. Trend for browse is stable for the key species, mountain big sagebrush, Gambel oak, and snowberry. Density of sagebrush has declined slightly due to a loss of decadent plants. There is now more mature plants and percent decadence has declined from 30% to 8%. Densities of Gambel oak and snowberry have declined slightly, but some of the difference is due to the change in sample size combined with the difficulty in counting these rhizomatous shrubs. Cover values for these two species are similar to 1992 estimates. Trend for the herbaceous understory is down slightly. Most perennial grass species declined in nested frequency except Kentucky bluegrass which increased significantly and currently provides 70% of the grass cover. Sum of nested frequency for grasses declined overall. Total grass cover also declined from nearly 15% in 1992 to 10% in 1999. Sum of nested frequency and cover of perennial forbs remained similar to 1992 estimates.

TREND ASSESSMENT
soil - stable
browse - stable
herbaceous understory - down for grasses, stable for forbs, slightly down overall

HERBACEOUS TRENDS --
Herd unit 14 , Study no: 19

Type	Species	Nested Frequency '86	'92	'99	Quadrat Frequency '86	'92	'99	Average Cover % '92	'99
G	Agropyron trachycaulum	a-	b29	43	-	13	21	.41	.55
G	Bouteloua gracilis	-	7	-	-	2	-	.06	-
G	Bromus anomalus	5	12	16	3	6	6	.29	.13
G	Carex spp.	44	32	23	19	17	13	2.24	.93
G	Koeleria cristata	-	2	-	-	1	-	.03	-
G	Muhlenbergia montana	-	8	7	-	4	2	.45	.06
G	Poa fendleriana	ab54	b99	a36	23	34	15	1.75	.70
G	Poa pratensis	a-	b82	c126	-	27	40	3.87	7.08
G	Sitanion hystrix	b63	b92	a10	29	32	3	3.43	.18
G	Stipa columbiana	a-	c22	b9	-	11	4	.73	.12
G	Stipa comata	b30	ab12	a8	11	6	4	.39	.07
G	Stipa lettermani	a-	c40	b8	-	19	5	1.21	.27
Total for Annual Grasses		0	0	0	0	0	0	0	0
Total for Perennial Grasses		196	437	286	85	172	113	14.90	10.13
Total for Grasses		196	437	286	85	172	113	14.90	10.13
F	Achillea millefolium	26	32	40	10	14	16	.89	1.39
F	Agoseris glauca	a-	a-	b6	-	-	4	-	.02
F	Arenaria congesta	1	3	6	1	1	4	.03	.12
F	Artemisia ludoviciana	b8	a-	a-	3	-	-	-	-
F	Aster chilensis	a-	b5	b14	-	3	7	.06	.06
F	Castilleja linariaefolia	b25	a2	a-	14	1	-	.00	-
F	Calochortus nuttallii	-	-	3	-	-	1	-	.00
F	Chenopodium spp. (a)	-	5	-	-	2	-	.01	-
F	Comandra pallida	2	-	1	1	-	1	-	.00
F	Collinsia parviflora (a)	-	-	3	-	-	2	-	.01
F	Epilobium brachycarpum (a)	-	b8	a-	-	3	-	.04	-
F	Erigeron divergens	a10	b23	a1	4	11	1	.30	.00
F	Erigeron eatonii	-	3	-	-	1	-	.03	-
F	Erigeron flagellaris	57	92	94	22	35	36	2.71	2.15
F	Eriogonum racemosum	b21	a5	ab14	11	4	6	.05	.08
F	Gilia aggregata	-	4	4	-	2	2	.03	.03

Type	Species	Nested Frequency '86	'92	'99	Quadrat Frequency '86	'92	'99	Average Cover % '92	'99
F	Heterotheca villosa	-	3	-	-	1	-	.63	-
F	Ipomopsis aggregata	-	-	-	-	-	-	-	.00
F	Lathyrus lanszwertii	$_{b}$77	$_{a}$49	$_{ab}$58	30	21	26	.93	1.61
F	Lupinus sericeus	28	13	31	16	6	14	.14	.91
F	Microsteris gracilis (a)	-	$_{a}$3	$_{b}$35	-	1	17	.00	.18
F	Oenothera spp.	-	2	-	-	1	-	.03	-
F	Penstemon strictus	$_{b}$35	$_{a}$16	$_{a}$5	20	8	4	.10	.07
F	Phacelia spp.	-	4	-	-	2	-	.01	.03
F	Phlox longifolia	41	60	46	18	27	19	.43	.11
F	Polygonum douglasii (a)	-	$_{b}$74	$_{a}$18	-	31	8	.42	.04
F	Senecio canus	$_{b}$28	$_{a}$4	$_{a}$7	13	2	3	.01	.01
F	Senecio multilobatus	-	-	2	-	-	1	.00	.00
F	Stellaria jamesiana	-	1	4	-	1	2	.03	.03
F	Taraxacum officinale	$_{a}$-	$_{b}$26	$_{b}$27	-	11	13	.49	.29
F	Tragopogon dubius	$_{a}$-	$_{b}$8	$_{b}$3	-	4	1	.20	.03
F	Unknown forb-annual (a)	-	$_{b}$8	$_{a}$-	-	4	-	.07	-
F	Unknown forb-perennial	$_{ab}$2	$_{b}$12	$_{a}$-	1	5	-	.02	-
Total for Annual Forbs		0	98	56	0	41	27	0.55	0.23
Total for Perennial Forbs		361	367	366	164	161	161	7.18	7.00
Total for Forbs		361	465	422	164	202	188	7.73	7.24

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --
Herd unit 14 , Study no: 19

Type	Species	Strip Frequency '92	'99	Average Cover % '92	'99
B	Artemisia tridentata vaseyana	44	41	3.44	2.59
B	Ceanothus fendleri	0	0	-	-
B	Chrysothamnus depressus	1	1	-	-
B	Mahonia repens	30	29	.71	1.04
B	Pinus edulis	0	0	-	-
B	Pinus ponderosa	8	8	19.45	1.32
B	Populus tremuloides	0	0	-	-
B	Prunus virginiana	1	0	-	-
B	Purshia tridentata	8	9	.97	.21
B	Quercus gambelii	36	37	5.79	6.10
B	Rosa woodsii	2	1	.00	-
B	Symphoricarpos oreophilus	58	53	12.09	11.84
Total for Browse		188	179	42.47	23.13

CANOPY COVER --
Herd unit 14 , Study no: 19

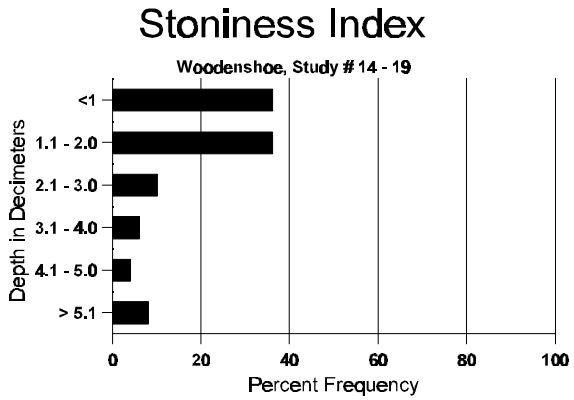
Species	Percent Cover ⍰99
Pinus ponderosa	21
Quercus gambelii	3

BASIC COVER --
Herd unit 14 , Study no: 19

Cover Type	Nested Frequency ⍰92	⍰99	Average Cover % '86	'92	'99
Vegetation	321	320	8.75	54.92	40.18
Rock	14	50	3.50	2.12	1.31
Pavement	4	30	0	0	.16
Litter	233	377	79.25	61.79	62.31
Cryptogams	24	8	0	.92	.07
Bare Ground	124	135	8.50	14.34	11.56

SOIL ANALYSIS DATA --
Herd Unit 14, Study # 19, Study Name: Woodenshoe

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
18.9	54.0 (16.9)	6.5	48.4	31.1	20.6	3.8	7.6	204.8	0.4



PELLET GROUP DATA --
Herd unit 14 , Study no: 19

Type	Quadrat Frequency ⍰92	⍰99	Pellet Transect Days Use/Acre (ha) ⍰99
Rabbit	11	3	N/A
Grouse	4	-	N/A
Elk	4	1	3 (7)
Deer	11	8	7 (17)
Cattle	4	8	26 (64)

BROWSE CHARACTERISTICS --
Herd unit 14 , Study no: 19

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
S	86	4	-	-	-	-	-	-	-	-	4	-	-	-	266			4
	92	4	-	-	1	-	-	18	-	-	23	-	-	-	460			23
	99	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
Y	86	-	1	-	-	-	-	-	-	-	1	-	-	-	66			1
	92	28	1	-	3	-	-	-	-	-	32	-	-	-	640			32
	99	20	3	-	-	-	-	-	-	-	23	-	-	-	460			23
M	86	8	1	1	-	-	-	-	-	-	9	-	-	1	666	26	18	10
	92	20	5	1	-	-	-	-	-	-	26	-	-	-	520	-	-	26
	99	38	7	1	-	-	-	-	-	-	46	-	-	-	920	25	35	46
D	86	10	8	1	-	-	-	-	-	-	14	-	-	5	1266			19
	92	12	6	1	4	2	-	-	-	-	19	-	5	1	500			25
	99	4	-	1	-	1	-	-	-	-	5	-	-	1	120			6
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	240			12

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	33%	07%	20%	-17%
'92	17%	02%	07%	-10%
'99	15%	03%	01%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	1998	Dec:	63%
	'92	1660		30%
	'99	1500		8%

Ceanothus fendleri																		
Y	86	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	86	1	-	-	-	-	-	-	-	-	1	-	-	-	66	7	20	1
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'92	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	132	Dec:	-
	'92	0		-
	'99	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus depressus																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	-	1
	99	-	-	1	-	-	-	-	-	-	1	-	-	-	20	-	-	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'92	00%	00%	00%	+ 0%
'99	00%	100%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	0	Dec:	-
	'92	20		-
	'99	20		-

Mahonia repens																		
S	86	4	-	-	-	-	-	-	-	-	3	1	-	-	266			4
	92	6	-	-	-	-	-	-	-	-	6	-	-	-	120			6
	99	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
Y	86	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	92	83	-	-	30	-	-	15	-	-	128	-	-	-	2560			128
	99	56	-	-	-	-	-	-	-	-	56	-	-	-	1120			56
M	86	67	-	-	-	-	-	-	-	-	67	-	-	-	4466	6	6	67
	92	41	5	-	26	-	-	30	-	-	102	-	-	-	2040	-	-	102
	99	126	-	-	-	-	-	-	-	-	126	-	-	-	2520	4	8	126

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	+ 0%
'92	02%	00%	00%	-21%
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	4599	Dec:	-
	'92	4600		-
	'99	3640		-

Pinus edulis																		
S	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'92	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	0	Dec:	-
	'92	0		-
	'99	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Pinus ponderosa																		
S	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	1	-	-	2	-	-	-	-	-	3	-	-	-	60			3
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	86	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	92	1	-	-	1	-	-	-	-	-	2	-	-	-	40			2
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	-	-	-	-	7	-	7	-	-	-	140	-	-	7
	99	-	-	-	-	-	-	-	7	-	7	-	-	-	140	-	-	7

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	+26%
'92	00%	00%	00%	-11%
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	133	Dec:	-
	'92	180		-
	'99	160		-

Populus tremuloides																		
S	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'92	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	0	Dec:	-
	'92	0		-
	'99	0		-

Prunus virginiana																		
Y	86	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	2	-	-	-	-	-	-	-	-	2	-	-	-	40	-	-	2
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	-80%
'92	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	200	Dec:	-
	'92	40		-
	'99	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Purshia tridentata																		
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	4	1	1	-	-	-	-	-	6	-	-	-	120			6
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	86	-	1	-	-	-	-	-	-	-	1	-	-	-	66	19	13	1
	92	-	-	2	1	-	-	-	-	-	3	-	-	-	60	-	-	3
	99	-	5	2	-	-	-	-	-	-	7	-	-	-	140	11	23	7
D	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	1	-	-	-	-	-	-	-	1	-	-	-	20			1
	99	-	1	-	-	1	-	-	-	-	1	-	-	1	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	100%	00%	00%	+67%
'92	50%	30%	00%	+ 0%
'99	70%	20%	10%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	66	Dec:	0%
	'92	200		10%
	'99	200		20%

Quercus gambelii																		
S	86	38	2	1	-	-	-	-	-	-	37	4	-	-	2733			41
	92	461	-	-	5	-	-	5	-	-	471	-	-	-	9420			471
	99	61	-	-	-	-	-	-	-	-	61	-	-	-	1220			61
Y	86	30	-	-	-	-	-	-	-	-	27	3	-	-	2000			30
	92	96	17	-	27	1	-	12	-	-	153	-	-	-	3060			153
	99	106	-	-	19	-	-	5	-	-	130	-	-	-	2600			130
M	86	8	1	-	-	-	-	-	1	-	9	1	-	-	666	77	44	10
	92	13	13	-	7	9	-	-	-	-	40	2	-	-	840	-	-	42
	99	29	1	-	8	-	-	-	7	-	45	-	-	-	900	49	44	45
D	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	1	3	1	-	-	-	-	-	-	4	-	1	-	100			5
	99	3	-	-	1	-	-	-	-	-	2	-	-	2	80			4
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	160			8

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	03%	00%	00%	+33%
'92	22%	.50%	.50%	-11%
'99	.55%	00%	01%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	2666	Dec:	0%
	'92	4000		3%
	'99	3580		2%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Rosa woodsii																		
Y	86	5	-	-	-	-	-	-	-	-	4	-	1	-	333			5
	92	3	-	-	1	-	-	-	-	-	4	-	-	-	80			4
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	86	3	-	-	-	-	-	-	-	-	3	-	-	-	200	24	17	3
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40	11	15	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	13%	-85%
'92	00%	00%	00%	-50%
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'86	533	Dec:		-
'92	80			-
'99	40			-

Symphoricarpos oreophilus																		
S	86	35	1	-	-	-	-	-	-	-	25	1	-	10	2400			36
	92	9	-	-	11	-	-	3	-	-	21	-	2	-	460			23
	99	12	-	-	-	-	-	-	-	-	12	-	-	-	240			12
Y	86	89	1	-	-	-	-	-	-	-	65	1	24	-	6000			90
	92	27	4	-	26	-	-	11	-	-	66	-	2	-	1360			68
	99	59	-	-	-	-	-	-	-	-	59	-	-	-	1180			59
M	86	128	8	-	-	-	-	-	-	-	95	-	40	1	9066	26	16	136
	92	90	19	5	25	4	-	-	-	-	140	-	3	-	2860	-	-	143
	99	102	-	-	3	-	-	-	-	-	105	-	-	-	2100	31	50	105
D	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	2	1	-	2	-	-	-	-	-	4	-	1	-	100			5
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	04%	00%	29%	-71%
'92	13%	02%	03%	-24%
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'86	15066	Dec:	0%
'92	4320		2%
'99	3280		0%